<u>**Amendment to the Claims**</u>:

The listing of claims will replace all prior versions, and listings of claims in the application:

<u>**Listing of Claims**</u>:

1. (Currently Amended) A modelling method for optimizing displacement conditions, in a porous medium wettable by a first <u>wetting</u> fluid, of a three-phase mixture of fluids including ~~this~~ <u>the</u> first wetting fluid and at least a second, non-wetting fluid, comprising ~~in combination~~:

~~- experimental determination of the~~ <u>determining experimentally a</u> variation curve of capillary pressure ~~(Pc)~~ in ~~the~~ pores of a sample of ~~this~~ <u>the</u> porous medium in ~~the~~ <u>a</u> presence of the <u>first</u> wetting fluid and of the <u>second</u> non-wetting fluid~~,~~<u>;</u>

~~[-]~~ modelling the pores of the porous medium by a distribution of capillaries with a fractal section by considering a stratified distribution of the fluids in the pores, the <u>first</u> wetting fluid spreading out in contact with ~~the~~ walls <u>of the pores</u> and around ~~said~~ at least one other fluid~~,~~<u>;</u>

~~[-]~~ ~~determination~~<u>determining</u>, from ~~said~~ <u>the</u> capillary pressure curve ~~(Pc)~~, ~~of~~ ~~the~~ fractal dimension values corresponding to a series of given values of ~~the~~ saturation in ~~the~~ liquid phases~~,~~<u>;</u>

[-] modelling hysteresis effects that modify ~~the~~ mobile saturations of the fluids ~~effectively~~ displaced in the sample according to the number of drainage and imbibition cycles undergone by the sample, involving different non-wetting fluid

3

trapping or untrapping constants according to whether a-the drainage stage-or an imbibition stage is the imbibition cycles are carried out,;

[-]-modelling the-relative permeabilities directly in the form of analytic expressions depending on the-different fractal dimension values which are obtained,; and

[-]-entering the relative permeabilities into a porous medium simulator and determination determining, by means of this the simulator, of optimum displacement conditions for the mixture of fluids in the porous medium.

2. (Currently Amended) A method as claimed in claim 1, characterized in that wherein the pores of the porous medium are modelled by a distribution of capillaries with a fractal distribution by considering a stratified distribution of the fluids in the pores, the wetting fluid spreading out in contact with the walls, the gas occupying the centre center of the pores and the second fluid being distributed in the form of an annular film in contact with both the gas and the first fluid.

3. (Currently Amended) A method as claimed in claim 1, characterized in that the wherein a reservoir simulator is used to determine the optimum characteristics of substances added to wetting fluid slugs injected in a formation alternately with gas slugs in order to displace hydrocarbons in place.

4

4. (Currently Amended) A method as claimed in claim 1, ~~characterized in that it comprises~~ comprising using a reservoir simulator ~~in order~~ to determine ~~the~~ optimum characteristics of a fluid injected in~~to~~ ~~the~~ soil in order to drain polluting substances.

5. (Currently Amended) A method as claimed in claim 2, ~~characterized in that the~~ wherein a reservoir simulator is used to determine ~~the~~ optimum characteristics of substances added to wetting fluid slugs injected in a formation alternately with gas slugs in order to displace hydrocarbons in place.

6-9. Cancelled (without disclaimer or prejudice).

10. (New) A method as claimed in claim 2, comprising using a reservoir simulator to determine optimum characteristics of a fluid injected into soil in order to drain polluting substances.